Title : Wireless transmission using an adaptive transmit antenna array

Abstract

Closed loop wireless communication of signals using an adaptive transmit antenna array (3), in which a plurality of copies of signals to be transmitted by the transmit antenna array (3) are produced with delays and weights (w_n^j) that are functions of the multi-path transmission channel characteristics ($\mathbf{H}$) from the transmit antenna array (3) to a receive antenna array (4) of a receiver (2) and are combined before transmission by the transmit antenna array. The delays and weights (w_n^j) of the transmit copies for each transmit antenna element are functions of the respective multi-path transmission channel characteristics ($h_{n,m=1}^{l=1},\ldots,h_{n,m=M}^{l=L}$) from that transmit antenna element to the receive antenna array (4) ssuch that the multi-path signal components propagated to each receiver element are received with distinguishable delays according to the propagation path. The receiver (2) combines the received signal components from each receive antenna element with delays and weights (***u***) that are respective functions of the multi-path transmission channels.

Preferably, the receiver comprises a multi-finger RAKE receiver (6) that copies the received signals from the receive antenna array with delays and weights (***u***) that are respective functions of the multi-path transmission channels and combines the copied received signals.

Figures 3 and 4